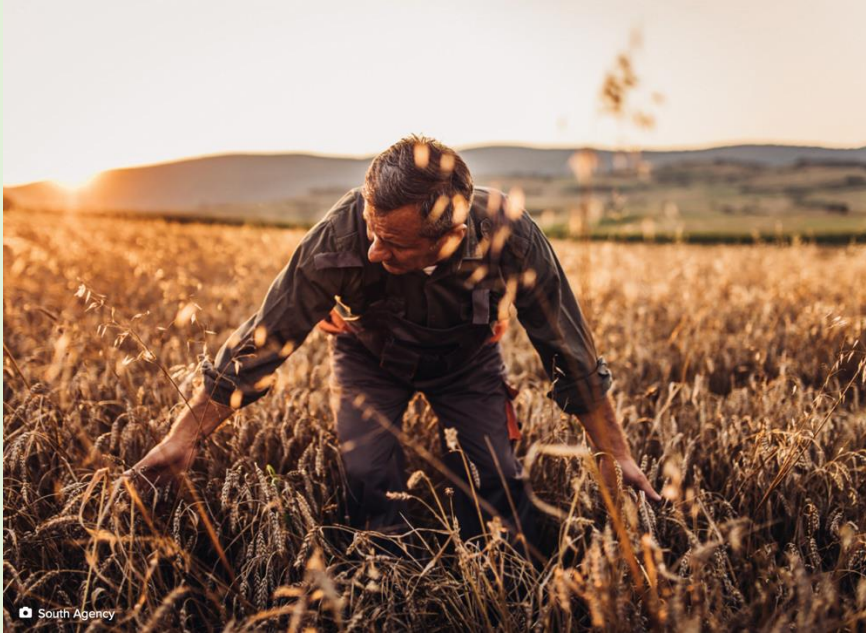
Canterbury Plains Could Lead the Way in Push for Increased Wheat Production

As Canterbury dairy farmers look to diversify land use, adding wheat production could make New Zealand self-sufficient in wheat while reducing greenhouse gas production and water demand.



The warm aroma of freshly baked bread is hard to beat. But surprisingly, even though we grow 452,000 tonnes of wheat in New Zealand, we import about 70 percent of the wheat we use to make our bread from Australia.

"New Zealand was self-sufficient in milling wheat until 30 years ago," says Ivan Lawrie, general manager at the Foundation for Arable Research.

If New Zealand achieved self-sufficiency once again, this could help insulate the rural economy from the disruptions to global supply chains we have seen over the past few years, which have raised concerns around ongoing food security.

A new agricultural model developed for the New Zealand arable farming sector looked at how to achieve this, developed by the Future Scenarios for Arable Agriculture research project funded by Our Land and Water. Producing up to 700,000 tonnes of wheat is needed annually to cover current shortfalls and low production years and meet dairy sector needs.

The modelling showed, at current yields (9.9t/ha), an extra 25,000 hectares are needed to achieve self-sufficiency in milling wheat for human consumption – an extra 250,000 tonnes. Widespread use of precision agriculture to improve yields (to 12t/ha) could see this drop to an extra 20,000 hectares.

From the environmental side, the modelling suggests that introducing this wheat production in a dairy system has clear positive impact, producing almost 8 times less CO_2-e biogenic emissions and using one-third less water for irrigation than dairy.

Canterbury Plans could lead the way

The vast Canterbury plains have some of the best arable soils in the country and produces most of the 425,000 tonnes of wheat grown annually in New Zealand. Along with plenty of growing expertise, this makes the region well set up for an increase in wheat cropping, says Lawrie.

Land could be freed up to accommodate extra wheat production as dairy farmers reduce stocking rates in response to freshwater and greenhouse gas regulations.

For dairy farmers wanting to grow wheat on some of their land there are several options.

With their own machinery and tractor driver, they can do a reasonable amount of the work themselves. Alternatively, a contractor could come in to do the sowing, tillage and harvesting as required. "Leasing out the land to an arable farmer who would grow a crop and pay either a lease or a percentage of the crop to the owner of the property is another option," Lawrie says.

There are specific requirements around storage and conditioning of grain which would see a need for more facilities, an increase in capacity of some machinery and more transport, he says.

More production could also help the numbers stack up for self-sufficiency.

"Domestic transport deficiencies and relative prices mean that sometimes it's cheaper to bring wheat into the country than grow it in the south and bring it up to Auckland. Currently there's not enough infrastructure and volume to make it happen," advises Lawrie.

With pockets of arable land further south in Southland and south Otago, this could provide the economy of scale. So too could production on pockets of arable land in the east and south of the North Island, Waikato and up to Northland, he says.

How do we know this?

Being able to see the flow-on effects when something in the system changes makes it easier to make decisions and plan to become more resilient to climate change and major disruptions, and to produce food more sustainably while maintaining good returns.

However, there are few agricultural models anywhere in the world that have been designed to combine production methods, emissions, energy, land use, water use, fertiliser use and profitability.

Scientists at University of Canterbury and Manaaki Whenua Landcare Research developed a modelspecifically aimed at New Zealand's agricultural systems and conditions, with data from NZ's Arable Food Industry Council, StatsNZ, and the Food and Agriculture Organisation of the United Nations.

Aimed at national and regional policy makers, and agricultural industry leaders, the model has used real world questions and scenarios, says modelling scientist Dr Clémence Vannier of Manaaki Whenua Landcare Research. As well as looking at self-sufficiency for wheat, the researchers modelled two further scenarios for arable agriculture in New Zealand: one to mitigate greenhouse gas emissions, and another to grow for alternative protein production.

This article was first published by Farmer's Weekly and is republished by agreement.

Additional information:

- Link to the new agricultural model developed for the New Zealand arable farming sector
- Future Scenarios for Arable Agriculture project
- Scenario 1: Self-sufficiency for wheat (above)
- Scenario 2: Mitigate climate change
- Scenario 3: Alternative protein production

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